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Epilogue: Textiles, Technology, and Gender in China

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The seminal research of Francesca Bray (1997) and Susan Mann (1992, 1997) on women and domestic work, especially textiles, have inspired a generation of new research in cultural history and art history, and the articles presented in this special issue attest to the productivity of this emergent field of inquiry. But curiously, historians of science and technology – Bray's intended audience – have been slow in embracing gender in their research agendas (with the notable exception of historians of medicine.) The reasons for this lacuna are complex, but the three articles gathered here suggest at least one answer: that one cannot take gender and women seriously without questioning existing paradigms about innovation, knowledge-making, and skills, and thus the very meanings of "science" and "technology."¹

Women and Innovations in Textile Technologies

The three authors bring a range of disciplinary concerns and interdisciplinary methods to bear on their inquiries, revealing in the process the complexities that belied the simple rubric of "textile technology." One salient

¹ For enabling definitions of "science," "technique" and "technology," see Bray 2008.

common thread is the vexing relationship between women and technological innovations. Guest editor Angela Sheng, a textile historian also trained in art history and sociology, has identified the Song-Yuan period, especially the thirteenth century, as a key transitional period in textile technologies. Sheng, whose visionary dissertation (1990) argued for the agency of rural people in using and controlling textile technology, parts ways with the majority of scholars in history of science by retaining faith in the proposition that women *could be* innovators. In reframing the question of innovation in terms of “knowledge in motion” and in calling attention to the importance of “local knowledge,” Sheng has animated the China field by introducing current analytic rubrics from historians of science in early modern Europe.

The first paper in this issue, by Alexandra Tunstall, considers a female textile innovator from the thirteenth century—the *kesi*-tapestry weaver Zhu Kerou. Like Huang Daopo, a thirteenth-century woman credited with the invention of several key cotton processing technologies including the treadle-operated multiple-spindle wheel which drastically speeded up the spinning process,² the facticity of Zhu was shrouded in controversy; unlike Huang, Zhu left a body of signed works whose reception in the late imperial period was inseparable from her authorial persona, as Tunstall shows. Tunstall, a historian of art who is committed to the investigation of materiality and techniques, addresses a different aspect of innovation from Sheng’s. Zhu—if she was a historic person—was part of a group of (otherwise anonymous) weavers in the twelfth to thirteenth centuries who began to use tapestry weaves to produce painting-like textiles. Instead of inventing a radically new method, they used the existing technique of “discontinuous wefts” on a tabby weave to handle the new demands of color transitions.

The result was a new sense of liminality between the two material mediums of paintings and textiles: *kesi*-tapestries were often mounted on album leaves as if they were paintings. Since painting was considered a masculine pursuit and weaving, nominally female, the comingling and conflation of these two artistic genres (and knowledge systems) animated anxieties about gender boundaries in the subsequent centuries. The other two papers in this issue, by I-Fen Huang and Yuhang Li, make this amply

² In an unpublished paper, Sheng (2009) provides an excellent conceptual framework to the issue of female inventions by revisiting the legend of Huang Daopo. Instead of ascertaining the facticity of Huang, she asks: What are the possible modes of transmission of new knowledge in cotton production from Hainan Island to the Jiangnan region? Furthermore, what are the social and material conditions that enabled a woman—any woman—to serve as the transmitter and innovator?

clear. Both authors, focusing on a third form of female textile work—embroidery, identify the late imperial Ming-Qing period as another key transitional period in the relationship between women and textile technologies. It was in the late Ming period, or the sixteenth to early seventeenth centuries, when embroidery emerged as a feminized and gentryfied “boudoir art” comparable to painting in its aesthetic possibilities and technical sophistication. These embroideries were often mounted as albums and garnered their own critical discourses from male connoisseurs.

I-Fen Huang, an art historian who specializes in the history of embroidery, offers an in-depth analysis of one such album by Han Ximeng (fl. first half of seventeenth century), a key innovator who established the brand of “Gu Family Embroidery” (*Guxiu*). Unlike Huang Daopo and Zhu Kerou, Han’s historicity was not in doubt, albeit misunderstandings about her life abound. Huang exposes, for example, the myth of Han’s artistry as feminine “boudoir art” by showing how it was entangled with the market from its inception. Under the leadership of Han Ximeng, the women embroiderers of her marital Gu family developed two kinds of new stitching techniques that seem paradoxical at first glance: those that rendered their pictorial embroideries more painting-like and those that accentuated the materiality of needlework. The former, as Huang argues, represents the women’s concession to male demands that their embroidery be painterly; the latter, however, represents the women’s assertion of embroidery as *their* independent art form irreducible to an imitation of a male prerogative.

I-Fen Huang’s research corroborates Grace Fong’s (2004) seminal argument that embroidery has become a “knowledge field” for women in the late imperial period. The potential for female expression and subjectivity-formation is further demonstrated by Yuhang Li, who in the last paper of this special issue analyzes the rigors of hair embroidery. Li, who works at the intersection of art history, Buddhist studies, and material culture studies, details how the plucking of one’s hair to embroider a religious icon became a ritualized practice of devotion firmly identified with the female gender in the late imperial period. We will return to this paper below for its insights on embodied skills, here we highlight an enigmatic innovation revealed by Li: the key development of hair embroidery in the late imperial period consists of the seemingly improbable splitting a strand of human hair into four or more flosses before threading the needle to achieve a finer, more painterly effect in the embroidered image. Documented in textual records and evident in extant works, this technique has since been lost after its efflorescence in the seventeenth century.

Taken together, the concerns and methods of sociology, art history, religious studies, material culture studies, not to mention gender studies, have cast new light on “innovation” and women’s vexing relationship with the concept. Although all three authors use the term, they do not mean it in the traditional sense of *ex novo* invention by an ingenious individual.³ On contrast, all three authors have highlighted the social contextual nature of knowledge-making, be it old or new, and placed analytic emphasis on the transmission of inventions—as knowledge in motion—instead of their alleged points of origin. The Li women’s communities in Hainan, the Gu family of marital and natal kinswomen, and possibly generations of *kesi*-tapestry weavers and Buddhist devotees, are examples of such “social contexts” of female communities that extended through time and space in which existing assemblages of knowledge were remade and passed on.⁴

Once innovation is re-conceptualized as re-assemblages of certain kinds of local knowledge over which women had considerable control (due in part to the Confucian ideology of “men plow; women weave,” expounded by Sheng in her Introduction) the importance of a second insight afforded by the three papers becomes clear. The possibility of new knowledge configurations is enhanced when practitioners of one field or specialty come into contact with another. This heightened potential for innovations is realized in an environment that can be called “distributed cognition” (Hutchins 1995).

I-Fen Huang and Yuhang Li both attribute new techniques in pictorial embroidery in the late Ming period to its productive engagement with the knowledge field of literati painting (a trend that began in the Song, as Alexandra Tunstall shows). The desire to emulate a painterly visual effect propelled embroiderers (many were painters themselves) to split hair, split silk thread, develop a richer palette of intermediate tones, and device new

³ In her study of the Ming reception of the Yuan woman painter Guan Dao-sheng, Jennifer Purtle (2011) has made the perceptive observation that in male-dominated societies, the invention of *a class of* things is a male prerogative. Women are acknowledged only as inventors of singular objects or as innovators of specific techniques within genres created by men.

⁴ The term assemblage is useful because, as Watson-Verran and Turnbull (1995) state, “all knowledge systems are assemblages of local knowledge.” Thus conceived, knowledge-making always involves movement, or traveling. See also Turnbull (2002), who observes that “Knowledge, space, travel, and narratives have deep natural affinities with one another deriving from the way we locate and conceive events, actions and our conceptions of ourselves and the world as we move through it.”

stitching alignments.⁵ Future research may reveal more nodes in the web of distributed knowledge, from dyeing to ceramics to food preservation and the preparation of cosmetics, which were accessible to women although these knowledge fields were not gendered feminine in an explicitly ideological way as textiles.

Gender is Work: Class and Other Differences

Although grouped under the rubric of “textile technology,” the knowledge and skills required in spinning cotton, weaving *kesi*-tapestry, and embroidery with silk floss and hair could not have been more different. To some extent the variety corresponds to class differentiations. Susan Mann (1997) has formulated “a hierarchy of women’s work” in imperial China whereby women from all classes were admonished to realize their worth by engaging in textile handwork, but the specific task differed for women from families with different means. Embroidery with silk was deemed appropriate for genteel ladies; on a sliding scale next came weaving and spinning cotton and finally, the lowly tasks of sewing and mending. Such factors as the value of silk over cotton, the difficulty of required skills, and the extent of domestic seclusion all served to mark the “class” status of the women textile worker.

In a similar vein, Francesca Bray (1997) has proposed a hierarchy of “womanly work” over “women’s work” that often correlated with socio-economic “class”: the former was being endowed with personal, moral significance in official discourses whereas the latter served utilitarian needs of the household or the market. One may quibble with the specific valuation of tasks, which as this set of papers shows is subject to changes in time and regional variations. But the premise of these two ways of conceptualizing distinctions among women is an important one that has found amplification in all three papers: gender identities—male *and* female—are made, not born. One was not born a woman (nor man), but became one through work and learning, and had to work at maintaining the identity through one’s life.

⁵ Coincidentally, paintings did not become more embroidery-like due to a certain material constraint: ink paintings can emulate neither the sheen of silk thread nor the texture of stitches. In this sense embroidery is a suppler medium that embodies more aesthetic possibilities than paintings. But the premise of male connoisseurs in the late imperial period is that painting is a superior genre that should serve as the norm for embroiderers to emulate. Thus gendered hierarchy is rooted in male domination over the literary, discursive field, especially of the reception of art works. See Purtle (2011).

Gender is work. It is so not just because of the ideologies of the Confucian statecraft thinkers who promoted the productivity of the household as the foundation of the empire, but also because of a more fundamental state of human bodies that are in fact more sexually ambiguous than the modern ideology of sexual dimorphism would admit.⁶ In imperial China, textile work was instrumental to the making and marking of both a universal womanhood and “class” differences among women.

The effectiveness of this cultural work of textiles is all the more striking in the face of persistent documentation of men who made textiles: laymen and monks who embroidered Guanyin in the Tang and Song dynasties (Li); male embroiderers employed in the Yuan bureau of Adornment Services in Fujian and commercial workshops in nineteenth-century Jiangsu (Huang). Ironically, the recurrence of male embroiders may also signal the limitations of the ideological persuasion of Confucian gender norms by hinting at the vibrancy of contending regimes of value – commercial or Buddhist.

Ultimately, what is most significant about the subject matters of the papers, be it Zhu Kerou’s “Camellia and Butterfly,” Han Ximeng’s “Flowers and Fishes” album, or portraits of embroidered Guanyin, is not that they were made by women but that they made women and womanhood. The social dimension of textile as cultural work is just as poignant as its individualistic dimension as self-expression of the artist-as-auteur. Among the most valuable contributions that the authors have made in this regard, often from meticulous examination of the extant textiles and tools, are descriptions of textile skill acquisition and the tedious repetitive nature of much of the work.

Highlighting the engagement of all cognitive faculties of the body (observing, listening, verbal exchanges, bodily practice) in this process and its open-ended nature, Sheng has called it “experiential learning” (see also Marchand 2010). Also revealing is the authors’ attentiveness to the materiality of textile work and skills, including considerations for such minutiae as how a foot-operated treadle might work or how a *kesi*-tapestry weaver cut the thread. Most exemplary is Li’s nuanced analysis of the ritualized nature of every aspect of hair embroidery, from plucking one’s hair to the labor displayed in each stitch. Although hair embroidery is an extreme example, the ritualized coming together of a body part, bodily efforts, embodied skills, needle, and thread in ongoing acts of “living labor”

⁶ Furth (1999: 44) has explained this ambiguity in terms of the “androgynous” theoretical body of the Yellow Emperor. For the modern myth of sexual dimorphism – the belief that one is/can only be either male or female, see Fausto-Sterling (2000).

provides a fitting scenario for conceptualizing textile work in general in all its multiplicities.

Textiles and Texts

The foregrounding of the embodied and material nature of skills as well as the on-going, open-ended nature of work places this set of papers at the forefront of science and technology studies. Efforts to retrieve alternative epistemes and to incorporate holders of practical knowledge into narratives of scientific and technological advances in early modern Europe have gone a long way in dislodging the authoritative self-claims of “science” and its text- and theory-based practitioners.⁷

For imperial China, the master narrative that has yet to be overwritten is not one of heroic scientific thinkers battling the superstition of the church, but the modernist construct of a class of Confucian gentlemen living their long-finger-nailed lives in garden villas or in the exalted halls of moral philosophy, blissfully ignorant of material concerns. Although such intellectual historians as Benjamin Elman have dismantled the false dichotomy between practical learning and speculative philosophy, old stereotypes died hard. Recent research on artisans and women such as the essays gathered here have begun to reveal the extent to which they were implicated in the lives and work of Confucian scholars and bureaucrats. The contributions of the former were obfuscated, along with such basic information as their names and dates of birth, in deliberate acts of historiographical erasure.

In her path-breaking revisionist study of Song Yingxing’s *The Work of Heaven and the Inception of Things* (*Tiangong kaiwu*), Dagmar Schäfer (2011) has offered a vivid account of the appropriation and erasure of the artisans and their craft knowledge in the hands of Confucian scholars. The very male scholars—Song in this case—who took an interest in craftsmen’s knowledge to the point of praising it and committing it to writing, are exactly the ones who trivialized it by claiming theoretical superiority over experiential learning. In spite of, and perhaps because of, such treatises as *Work of Heaven*, the presence of craftsmen became even more obscure as their worldviews and knowledge became “colonized” in the act of textualization.

The essays gathered here suggest a striking similarity between the erasure of artisans and that of textile women in annals of Chinese history. The unevenness of discursive power between male and female is ironically

⁷ For a recent collaborative effort, see Roberts, Schaffer, and Dear (2007).

most evident in the late Ming, at the height of the elevation of pictorial textiles as a form of painting. When male scholar Wen Congjian praised the *kesi*-tapestry of Zhu Kerou, or when Dong Qichang admired the embroidered paintings of Han Ximeng, the male scholar's criteria became the most salient if not the only yardstick with which one could evaluate the women's artistry. Analogous to Song Yingxing's promotion of the craftsmen, the praise of Wen and Dong can be seen as attempts to colonize a flourishing female art and craft, albeit with varied degrees of success. We have no access to Zhu's life or veracity except through Wen's words, but I-Fen Huang's skillful excavation has re-established the subjectivity of Han that exceeded the words of men.

Seen in this light, the papers here underscore how crucial it is to take the materiality and visibility of textiles seriously, for in these realms lie one's best hopes of seeing through the hegemony of the text. It is not that texts should not be read, but the scholar has to be attentive to the cultural works of different genres of texts while seeking to map their discursive limits. The erasure of the presence of the female and the artisanal—that which the researcher seeks to retrieve—is the most salient cultural work that male connoisseurship writing performed.

One strategy against the grain of the hegemony of texts is to focus on the means of transmission of craft knowledge—be it textual, material, or corporeal. A particularly fruitful research question is “when and how was the knowledge about making a class of things textualized, if at all?” and “what is gained and lost in this process of textualization?” In the field of embroidery, the first “technical manual” that discloses stitching techniques to the point of being reproducible was authored by a gentry woman, Ding Pei, in 1821 (Fong 2004: 26ff).⁸ Although one cannot rule out the existence of other treatises that circulated in the late imperial period and had since been lost, it is highly unlikely.

One may safely conclude that during the Song-Yuan and Ming-Qing periods, the techniques and technologies of textile work, in all its varieties and performed by females and males, were transmitted by bodily and material means outside the realm of scholarly texts. The three authors' meticulous attention to the materiality of craft, the social contexts of skill acquisition and transmission, the open-ended and interactive nature of knowledge, not to mention their insistence that however hidden, the

⁸ Fong (2004: 22) has also discussed an earlier text, the *Cixiu tu* 刺繡圖, the earliest extant version is in a late Ming anthology. She identified its appearance as the moment when embroidery began to be aestheticized as an art. But the information in this brief treatise pertains more to the appreciation of embroidery than to the making.

women and artisans who made the ten thousand things for the empire had to be present *somewhere*, have allowed one to glimpse the contours of a new kind of history of art and technology.

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